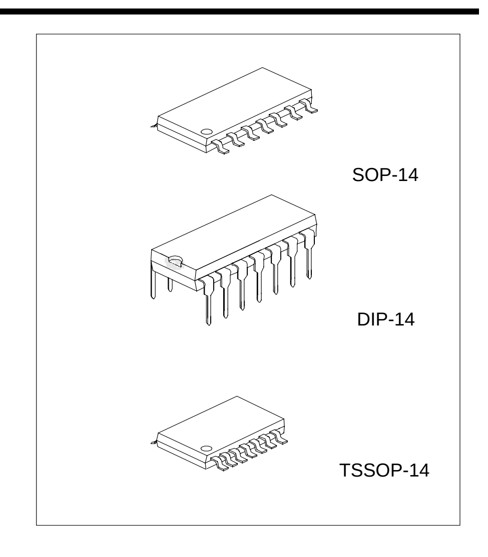
QUAD OPERATIONAL AMPLIFIERS



*Pb-free plating product number: LM324L

■ DESCRIPTION

The UTC LM324 consists of four independent, high gain internally frequency compensated operational amplifiers which are designed specifically to operated from a single power supply over a wide voltage range. Operation from split power supplies is also possible. Application areas include transducer amplifier, DC gain blocks and all the conventional OP amp circuits which now can be easily implemented in single power supply system.

■ FEATURES

*Internally frequency compensated for unity gain.
*Large DC voltage gain :100dB.
*Wide operating supply range (Vcc=3V~32V).
*Input common-mode voltage includes ground.
*Large output voltage swing: From 0V to Vcc-1.5V.
*Power drain suitable for battery operation.

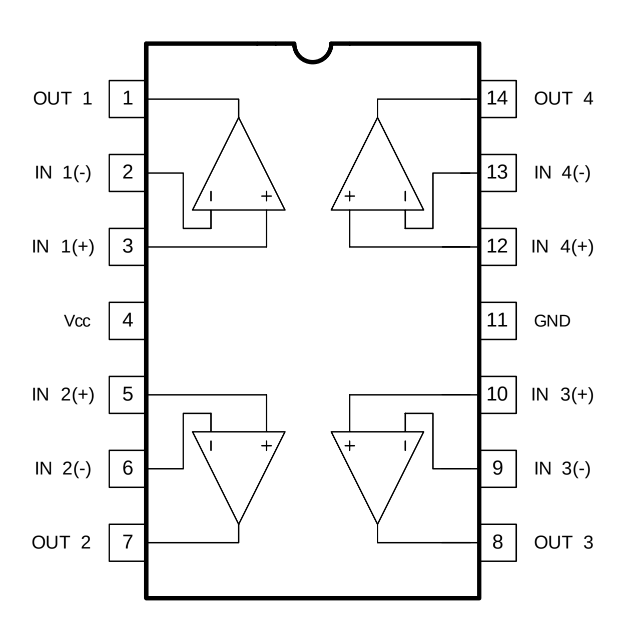
www.DataSheet4U.com

■ ORDERING INFORMATION

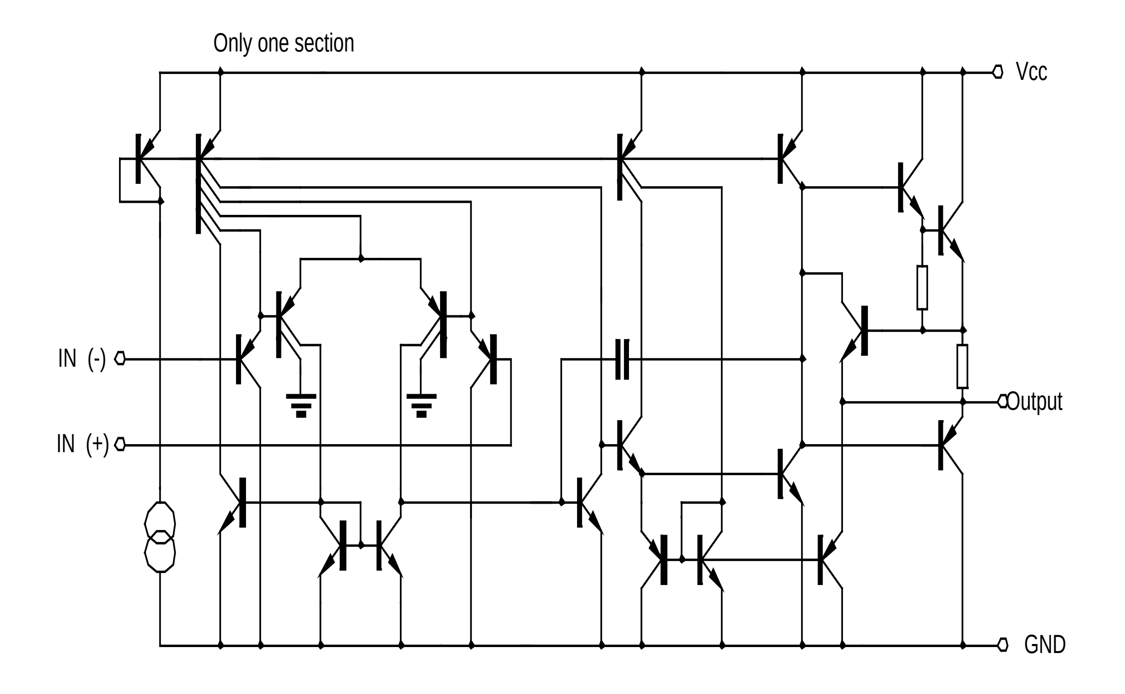
Ordering Number		Package	Packing
Normal	Lead Free Plating		
LM324-P14-R	LM324L-P14-R	TSSOP-14	Tape Reel
LM324-P14-T	LM324L-P14-T	TSSOP-14	Tube
LM324-S14-R	LM324L-S14-R	SOP-14	Tape Reel
LM324-S14-T	LM324L-S14-T	SOP-14	Tube
LM324-D14-T	LM324L-D14-T	DIP-14	Tube

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■ PIN DESCRIPTION



■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

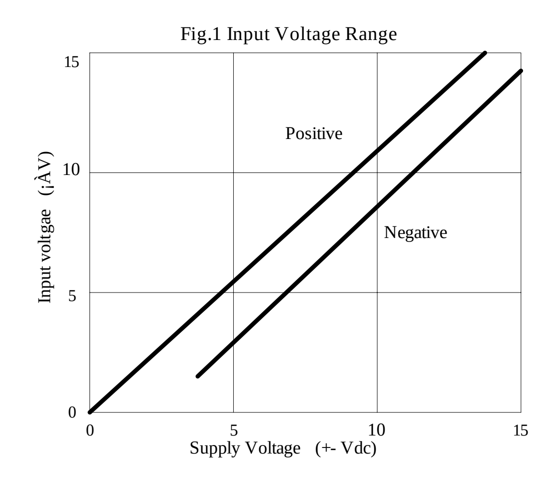
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	±18	V
Differential Input Voltage	$V_{I(DIFF)}$	32	V
Input Voltage	V_I	-0.3 ~ +32	V
Power Dissipation	P_D	570	mW
Operating Temperature Range	T_{OPR}	0 ~ +70	°C
Storage Temperature Range	T_{STG}	-40 ~ +150	°C

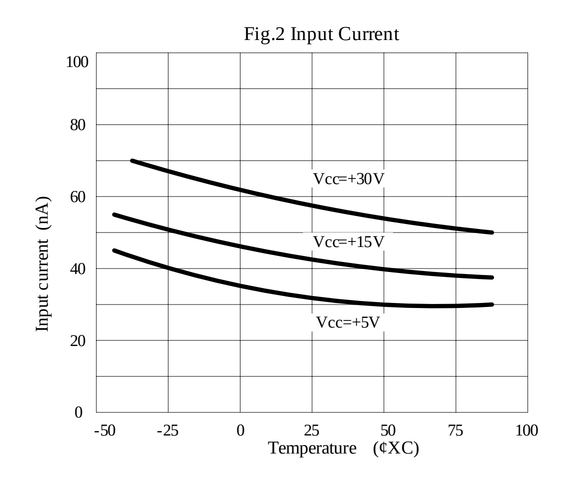
■ ELECTRICAL CHARACTERISTICS

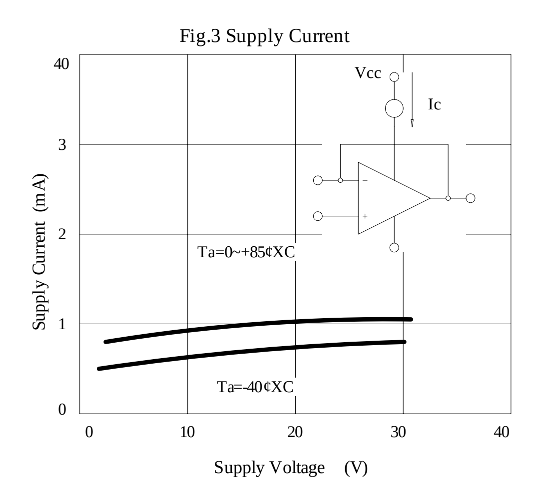
(V_{CC}=5.0V, All voltage referenced to GND unless otherwise specified.)

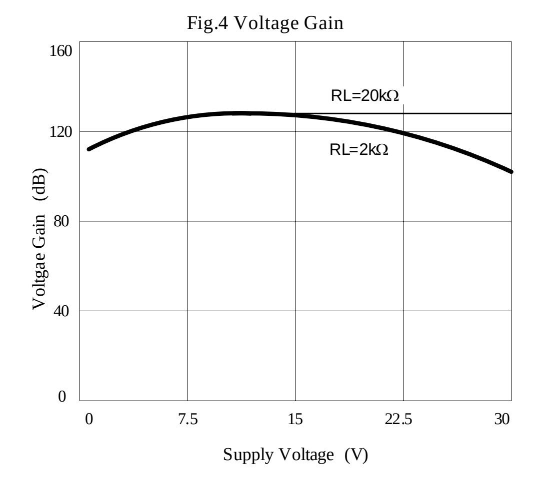
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Offset Voltage	V_{IO}	V_{CM}=0V toV_{CC}-1.5V $V_{O(P)}$=1.4V, R_S=0Ω			7.0	mV
Input Offset Current	I_{IO}				50	nA
Input Bias Current	I_{BIAS}				250	nA
Input Common Mode Voltage	$V_{I(R)}$	V_{CC}=30V	0	V_{CC}-1.5		V
Power Supply Current	I_{CC}	R_L=∞, V_{CC}=30V		1.0	3.0	mA
		V_{CC}=5V		0.7	1.2	mA
Large Signal Voltage Gain	G_V	V_{CC}=15V, R_L≧2KΩ $V_{O(P)}$=1V ~ 11V	25	100		V/mV
Output Voltage Swing	$V_{O(H)}$	V_{CC}=30V, R_L=2KΩ	26			V
		V_{CC}=30V, R_L=10KΩ	27	28		V
	$V_{O(L)}$	V_{CC}=5V, R_L>10KΩ		5	20	mV
Common Mode Rejection Ratio	CMRR		65	75		dB
Power Supply Rejection Ratio	PSRR		65	100		dB
Channel Separation	CS	f=1KHZ ~ 20KHZ		120		dB
Short Circuit Current to Ground	I_{SC}			40	60	mA
Output Current	I_{SOURCE}	V_I(+)=1V, V_I(-)=0V V_{CC}=15V, $V_{O(P)}$=2V	20	40		mA
	I_{SINK}	V_I(+)=0V, V_I(-)=1V V_{CC}=15V, V_O(P)=2V	10	13		mA
		V_I(+)=0V, V_I(-)=1V V_{CC}=15V, $V_{O(P)}$=200mV	12	45		mA
Differential Input Voltage	$V_{I(DIFF)}$				V_{CC}	V

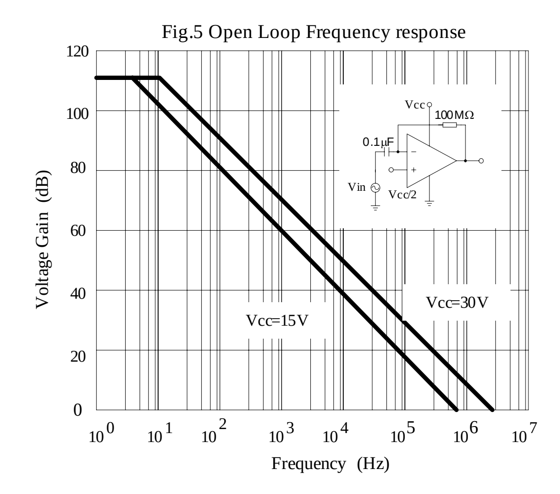
■ TYPICAL CHARACTERISTICS

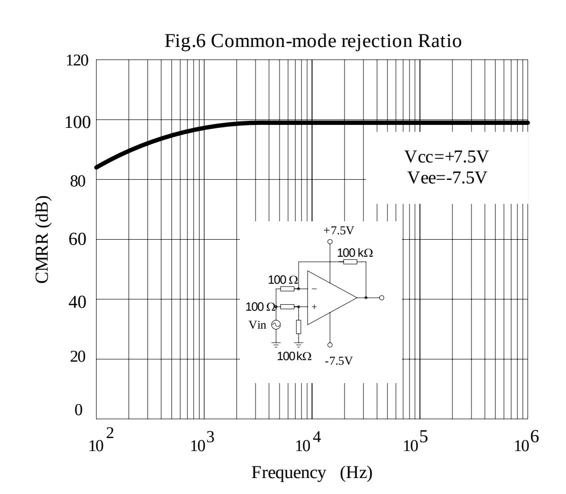












■ TYPICAL CHARACTERISTICS(cont.)

Fig.7

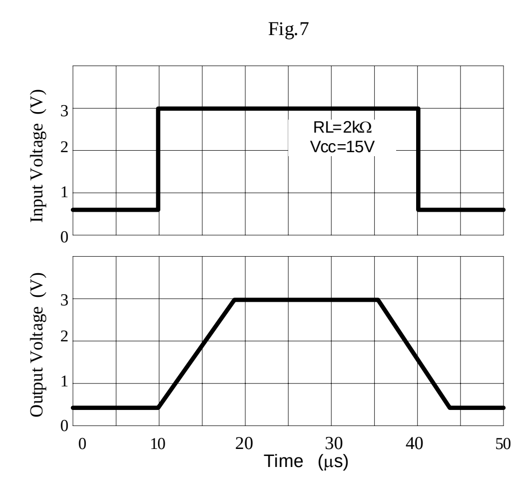


Fig.8 Voltage Follower pulse response (small signal)

Output volgae (V)

Time (µs)

Fig.9 Large signal Frequency Response

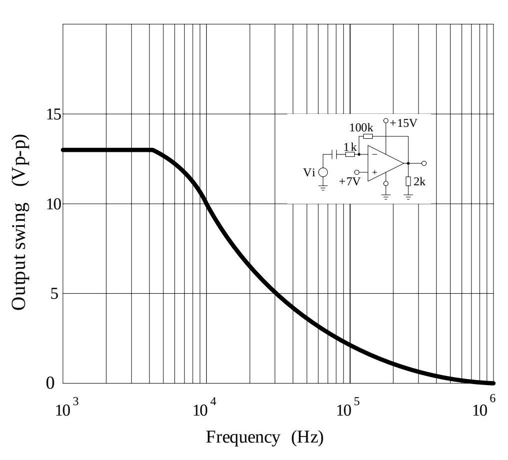


Fig.10 Output Characteristics current sourcing

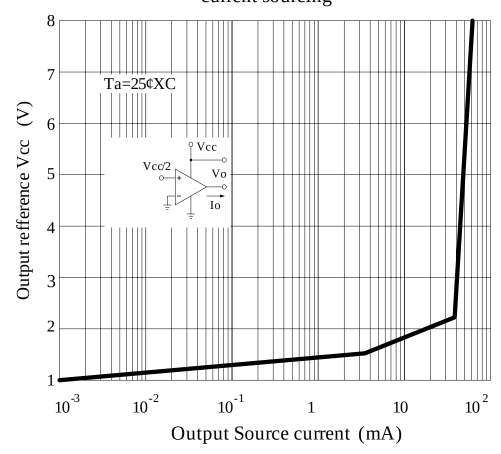


Fig.11 Output Characteristics Current sinking

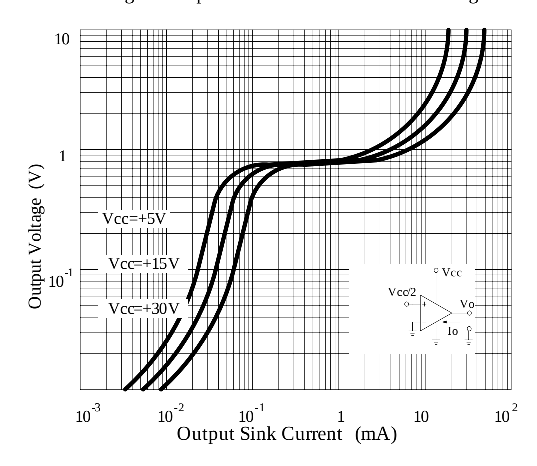
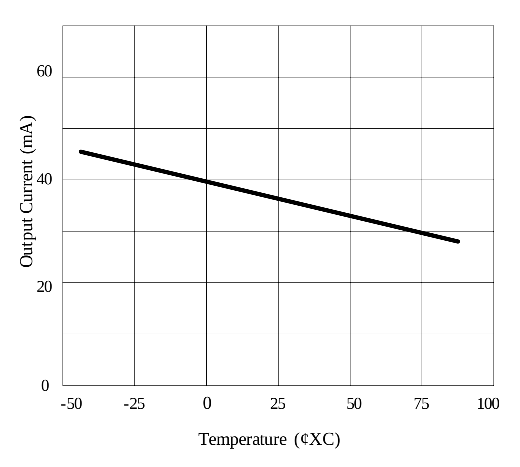


Fig.12 Current Limiting



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